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(54) **MULTICOMPARTMENT THERMOPLASTIC BAG**

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(\* ) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

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(52) **U.S. Cl.** ..... **383/38; 383/63; 383/102; 383/211**

(58) **Field of Search** ..... 383/38, 63, 65, 383/100, 102, 105, 37, 39, 40, 210, 211, 95; 20/495.08

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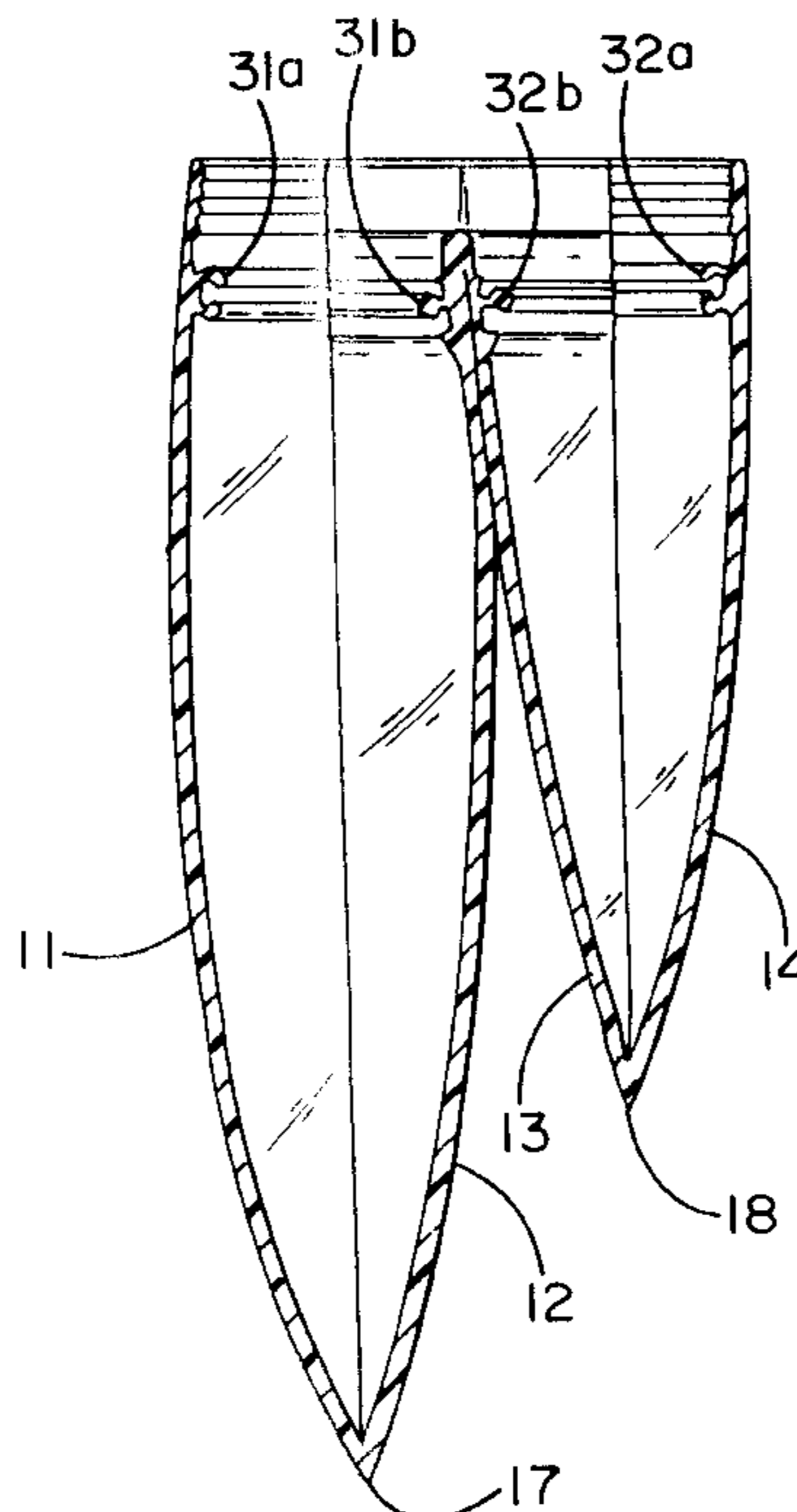
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(57) **ABSTRACT**

A multicompartment reclosable thermoplastic bag having at least two compartments is disclosed. Each compartment has a top, a bottom, side edges, and two opposing sidewalls joined at the side edges and the bottom. Each compartment has a closure across the top thereof, which are arranged back-to-back and aligned such that the center points of each closure are less than 1/2 inch (1.27 cm) away from each other. The compartments are attached together proximate the tops of the compartments, and the bottoms of the compartments are free from being attached to each other. A process for making the bag is also disclosed.

**14 Claims, 4 Drawing Sheets**



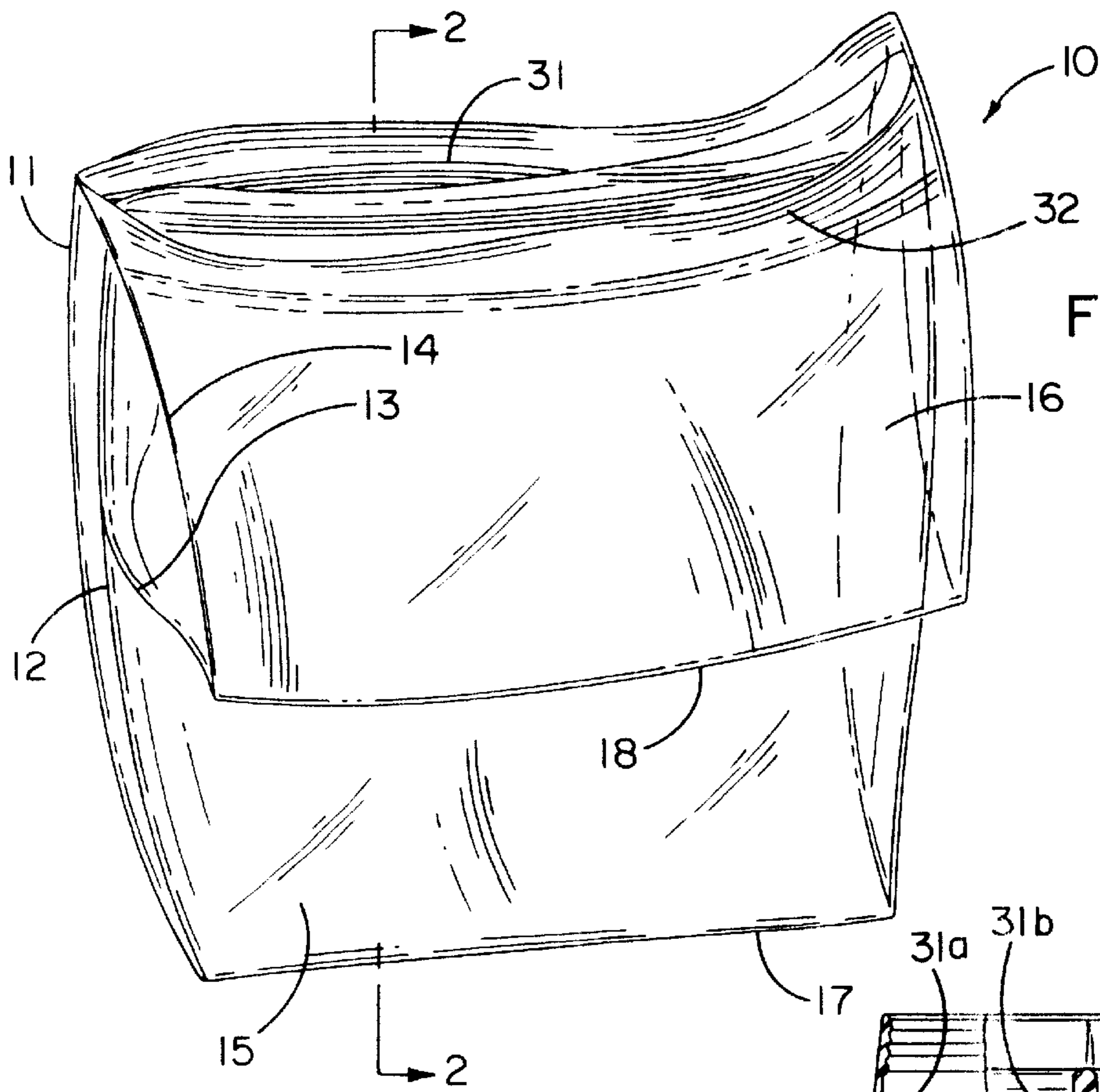


FIG. 1

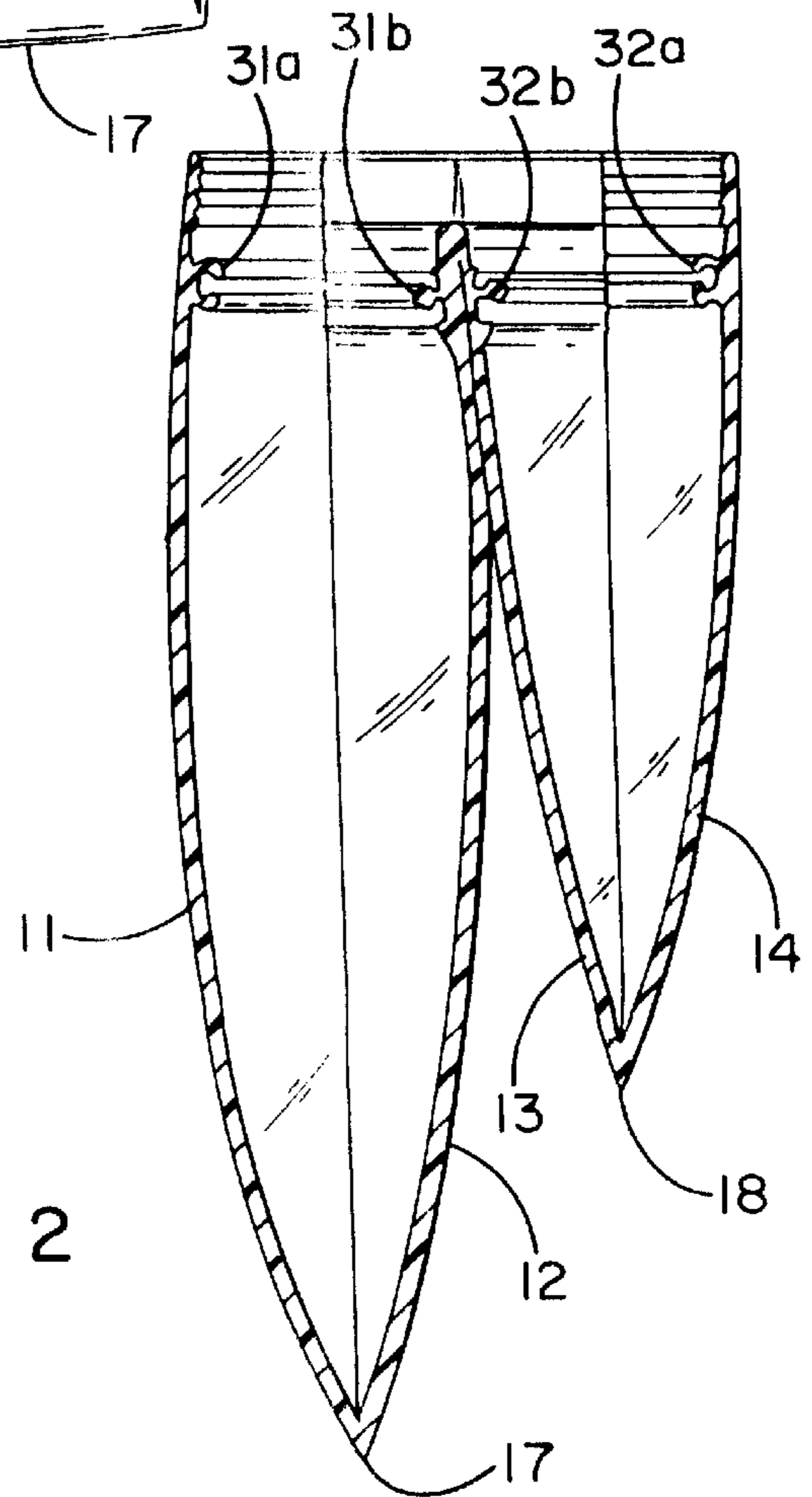
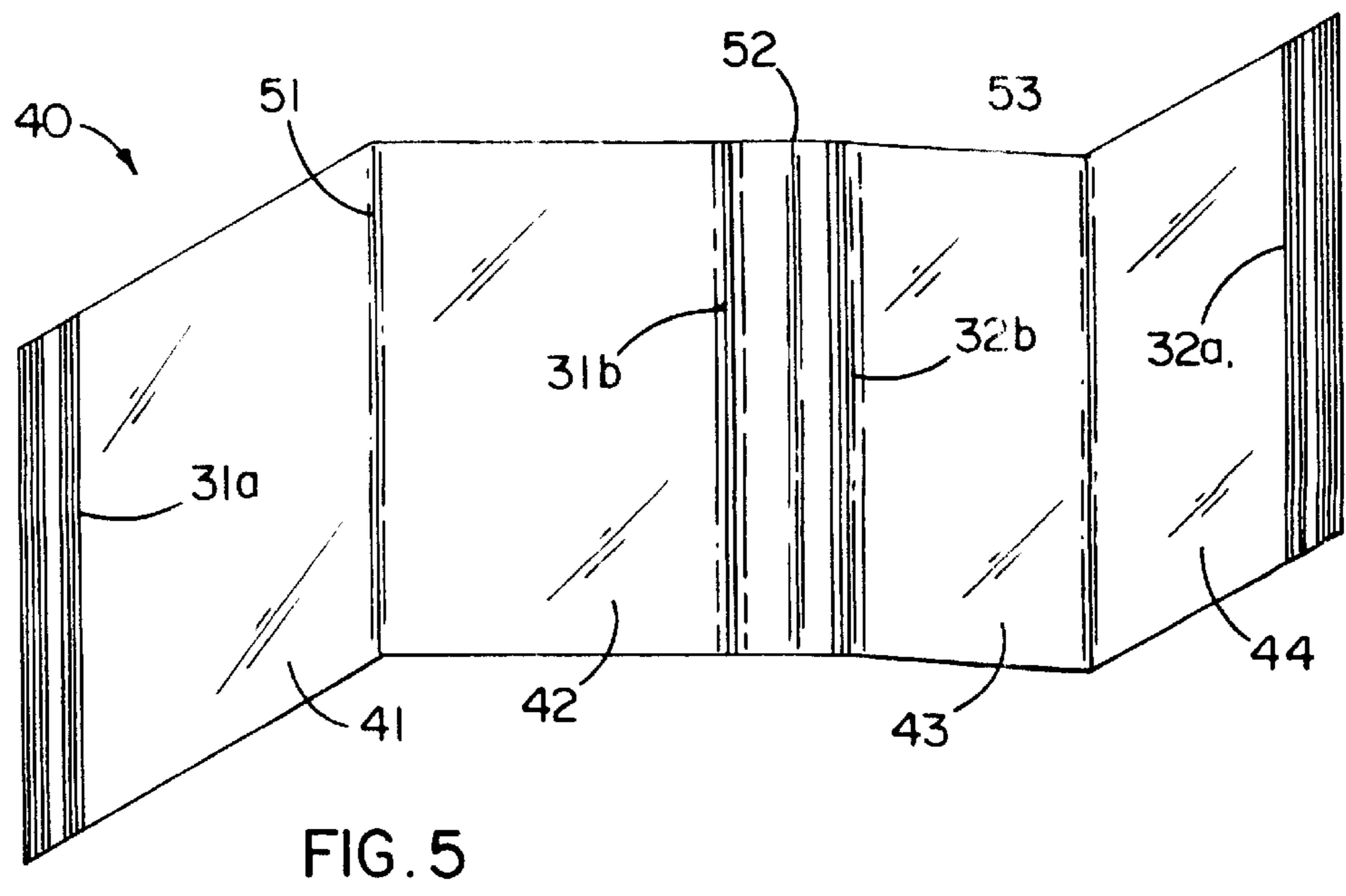
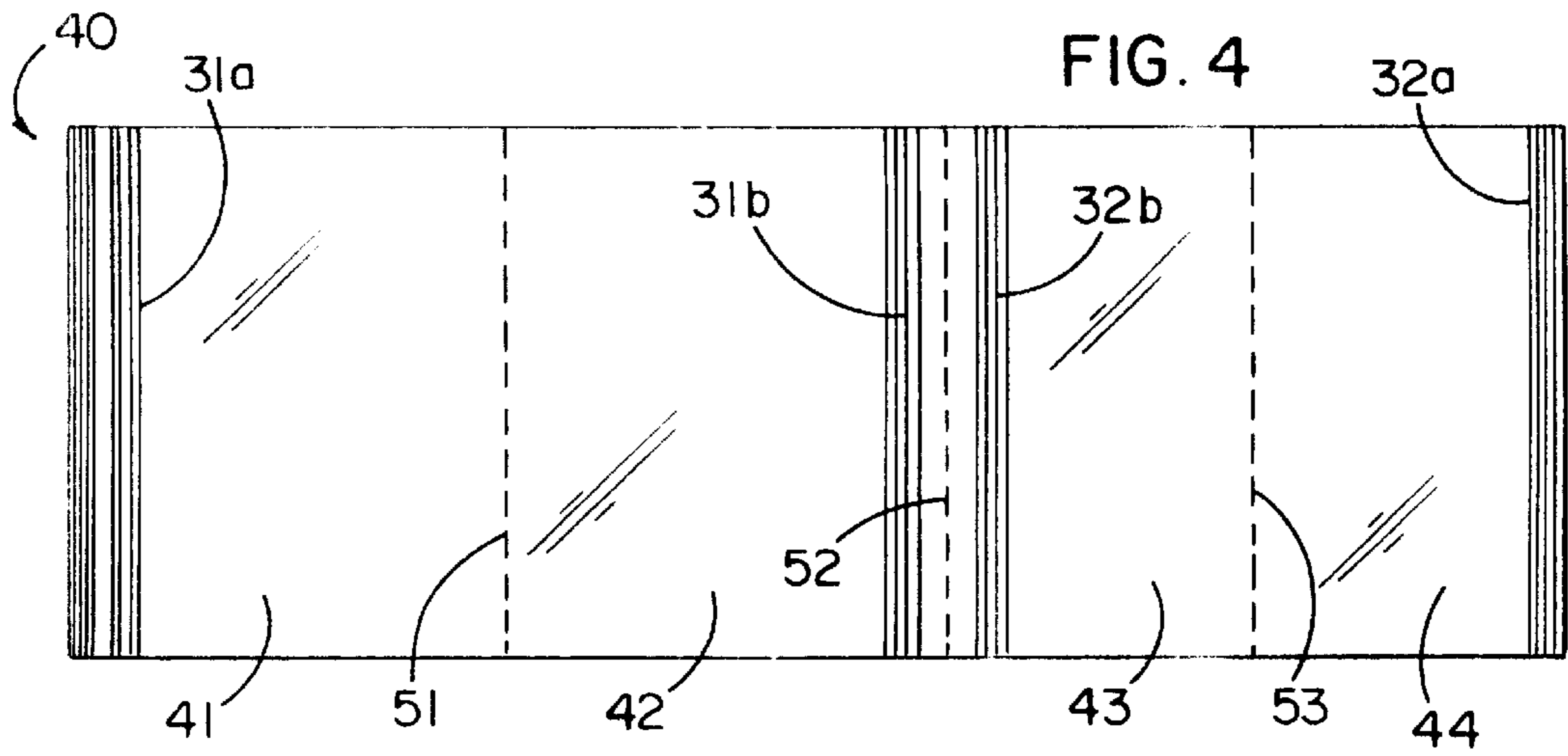
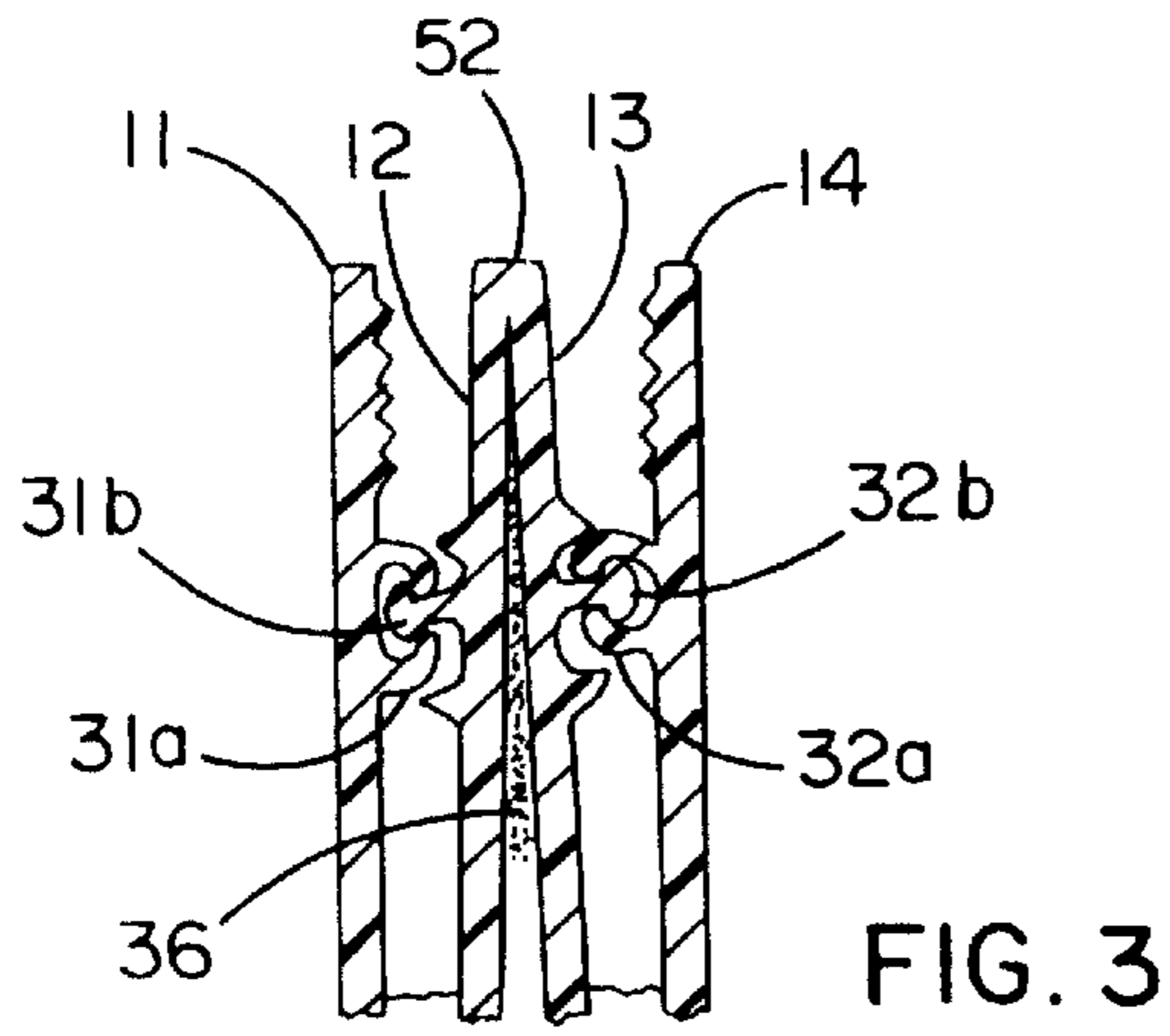


FIG. 2



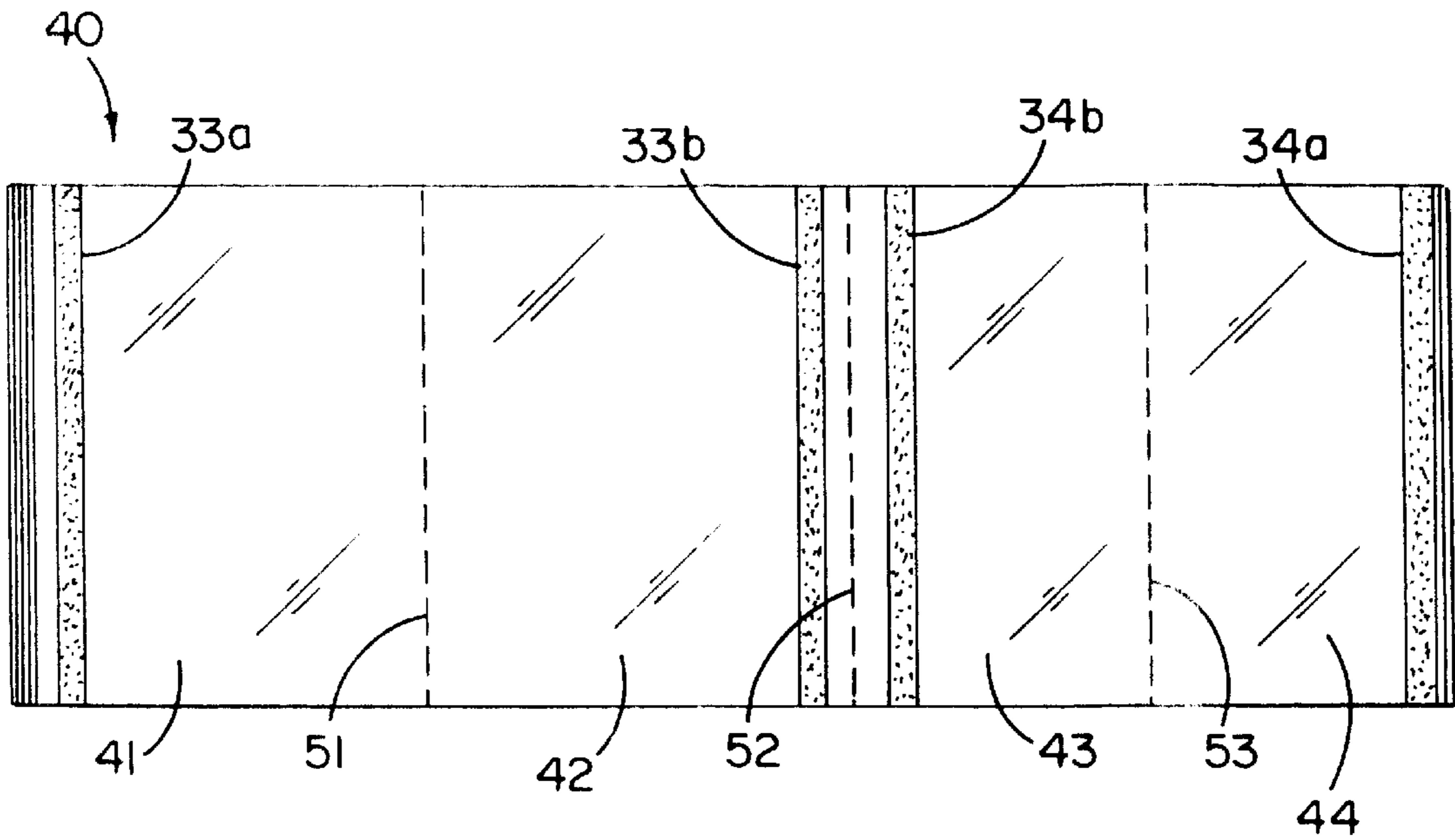


FIG. 6

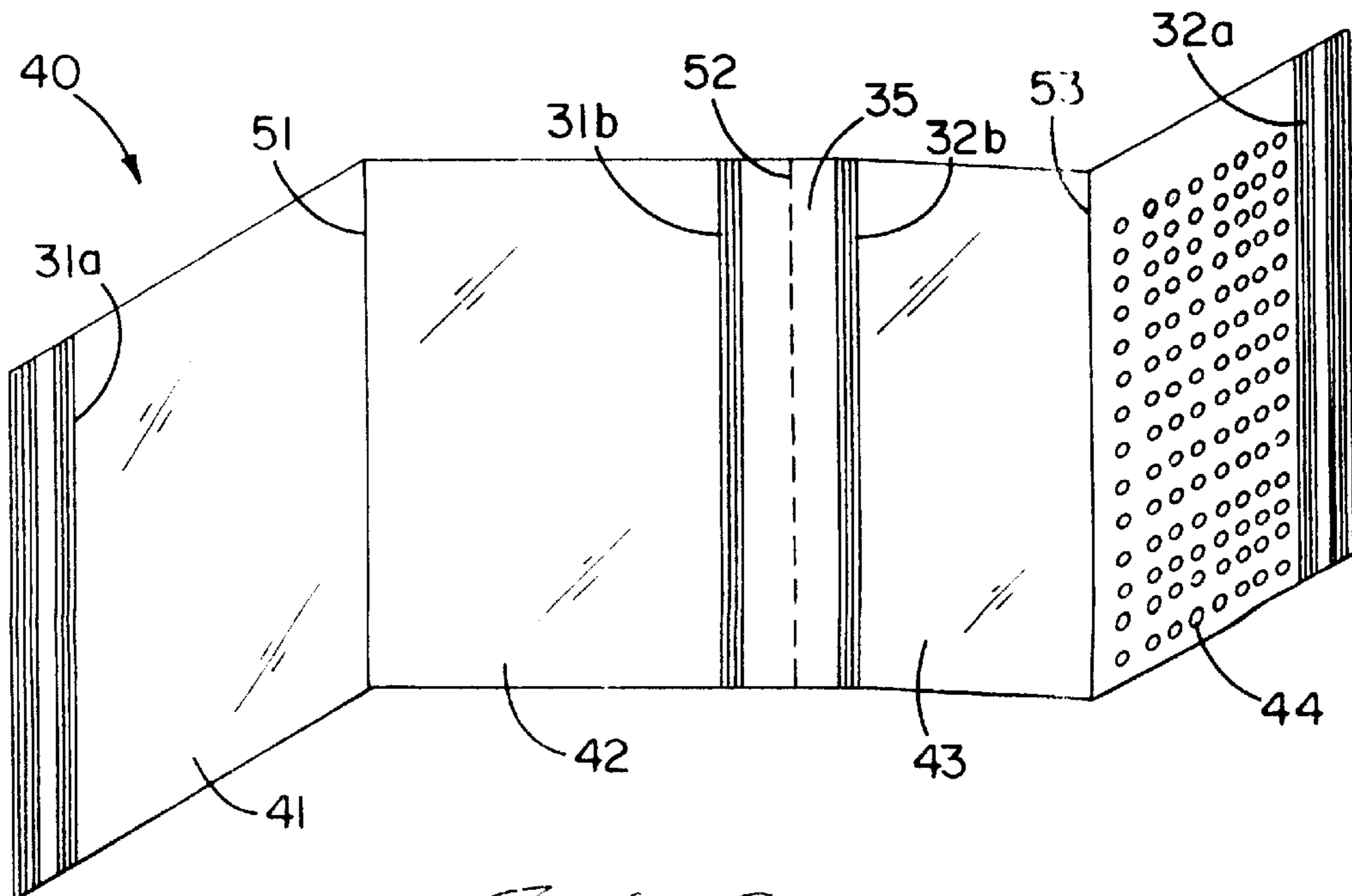
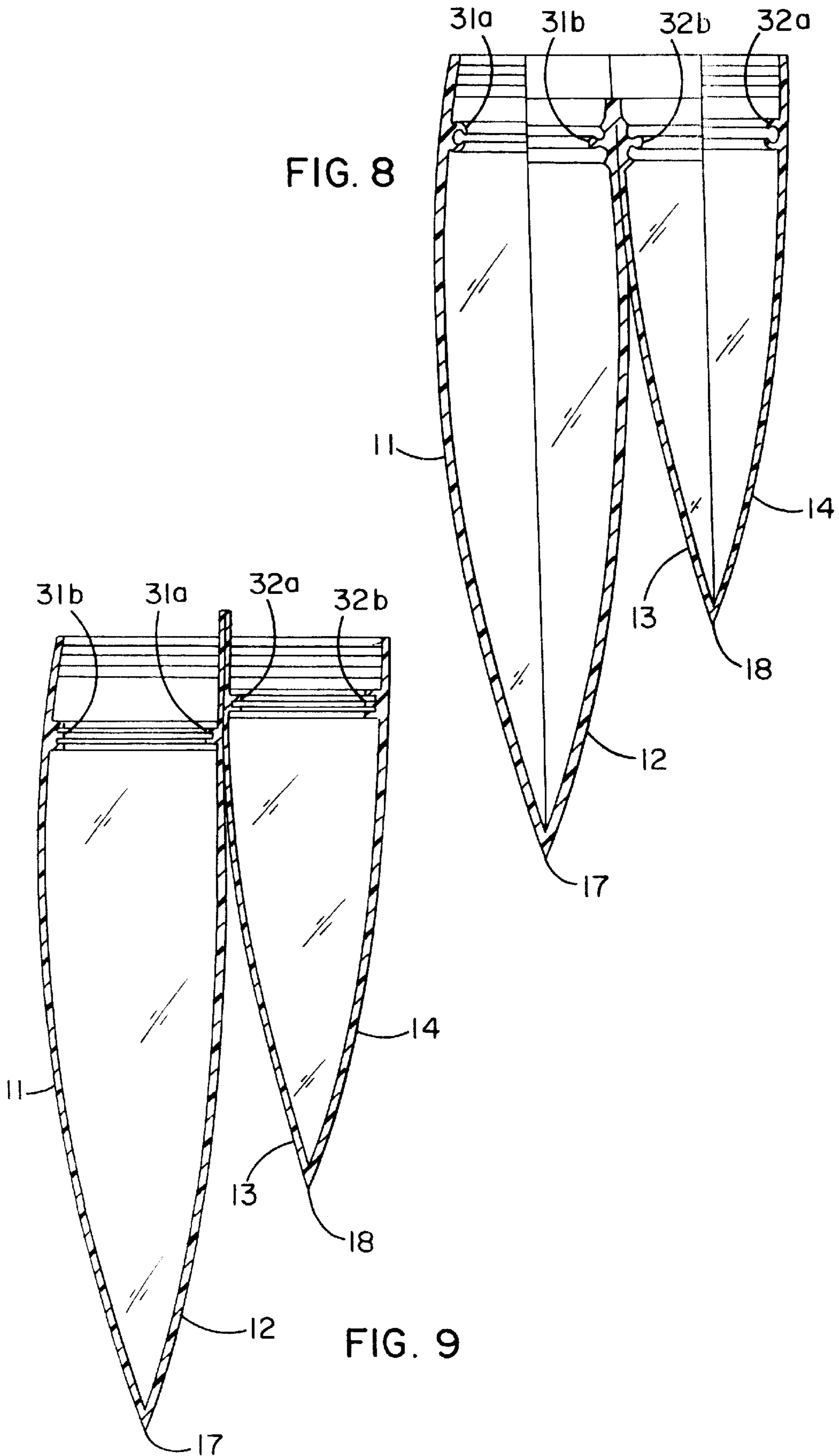


FIG. 7



## MULTICOMPARTMENT THERMOPLASTIC BAG

### FIELD OF THE INVENTION

The present invention relates to reclosable thermoplastic bags. More particularly, the present invention relates to reclosable thermoplastic bags having multiple compartments.

### BACKGROUND OF THE INVENTION

Reclosable thermoplastic bags are commonly used in food packaging. The bags are generally made out of a plastic film and have two side walls that are folded at the bottom and sealed at the sides. The bags typically have a reclosable fastener at the top of the bag, such as, for example, an adhesive, a wire tie, or a plastic zipper such as that described in U.S. Pat. No. 5,140,727, issued to Dais et al.

The consumers that use these bags often need more than one bag at any given time. Therefore, bags having more than one compartment have been developed. For example, U.S. Pat. No. 4,993,844 discloses a compartmented pouch. However, the closures in the pouch of the '844 patent are displaced relative to one another, making it difficult for a consumer to close one compartment without squashing the contents of another compartment. Furthermore, the '844 patent describes a shared wall for the compartments, which restricts the available volume inside the compartment. Another example is U.S. Pat. No. 5,024,536, which describes a resealable compartmented bag. However, the '536 patent describes the compartments of the bag as being sealed together along the bottom edges of the compartments, thereby restricting the available volume inside the compartments.

It would be an advance in the art of compartmented bags to provide a multicompartment bag in which all of the compartments can be closed simultaneously but opened independently of one another, and in which the available volume inside the compartments is maximized.

### SUMMARY OF THE INVENTION

The present invention provides such a reclosable thermoplastic container having a plurality of compartments. In one aspect, the present invention is a multicompartment reclosable thermoplastic bag comprising at least two compartments, each compartment having a top, a bottom, side edges, and two opposing sidewalls joined at the side edges and the bottom, each compartment having a closure across the top thereof, the closures being arranged back-to-back, the closures being aligned such that the center points of each closure are less than  $\frac{1}{2}$  inch (1.27 cm) away from each other, wherein the compartments are attached together proximate the tops of the compartments, and the bottoms of the compartments are free from being attached to each other.

In a second aspect, the present invention is a process for making a reclosable thermoplastic bag having a plurality of compartments, the process comprising the steps of: folding a sheet of film in accordion fashion into at least four panels a, b, c and d, the panels being in series so that panel a is adjacent to panel b, panel b is adjacent to panel c, and panel c is adjacent to panel d; applying a closure element to each panel such that all of the closure elements are aligned; and sealing the sides of the four panels to form a bag having at least two compartments, so that the closure elements form a closure to close the compartments to the outside.

The multicompartment bag of the present invention is advantageous because all of the compartments can be closed

simultaneously, but each compartment can be opened independently of the other compartments, if desired. Furthermore, the volume available inside the compartments of the multicompartment bag of the present invention is increased because the compartments are not attached to each other along the bottom. Another advantage of the present invention is that the multicompartment bag can be made using a single sheet of thermoplastic film.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the multicompartment thermoplastic bag of the present invention.

FIG. 2 is a sectional view of the bag of FIG. 1.

FIG. 3 is a sectional view of a closure used in the bag of FIG. 1.

FIG. 4 is a plan view of an extruded sheet used to make the multicompartment bag of the present invention.

FIG. 5 is a perspective view of the sheet of FIG. 4.

FIG. 6 is a plan view of an extruded sheet used to make a multicompartment bag of the present invention, employing adhesive closures.

FIG. 7 is a perspective view of the sheet of FIG. 4, illustrating the use of a zipper tape.

FIG. 8 is a sectional view of the bag of claim 1, wherein the thickness of the sidewalls of the compartments differs.

FIG. 9 is a sectional view of an alternative embodiment of a multicompartment bag constructed in accordance with the teachings of the invention.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates a multicompartment reclosable thermoplastic bag **10** of the present invention. Bag **10** includes at least two compartments **15** and **16**. Each compartment **15** and **16** has a top, a bottom, side edges, and two opposing sidewalls joined at the side edges and the bottom. Thus, compartment **15** has a bottom edge **17** and two opposing side edges. Compartment **16** likewise has a bottom edge **18** and two opposing side edges. Each compartment also has a closure element across the top thereof. Thus, compartment **15** has closure **31** across the top thereof, while compartment **16** has closure **32** across the top thereof. The bag **10** also includes means for joining the compartments **15** and **16** proximate to the tops thereof.

Each sidewall of compartments **15** and **16** is made of a layer of thermoplastic film. Thus, bag **10** includes at least four layers of film **11**, **12**, **13**, and **14**. Each layer **11**, **12**, **13**, and **14** has a top edge, a bottom edge and two opposing side edges. Layers **11** and **12** are attached along the bottom and the side edges to form the compartment **15**. Layers **13** and **14** are attached along the bottom and the side edges to form the compartment **16**. Thus, as shown, layer **11** is an outer layer of the first compartment, while layer **12** is an inner layer of the first compartment. Likewise, layer **14** is an outer layer of the second compartment while layer **13** is an inner layer of the second compartment.

FIG. 2 illustrates a sectional view of an embodiment of the bag of the present invention. The layers **11**, **12**, **13**, and **14** can be made from any suitable thermoplastic film such as, for example, low density polyethylene, linear low density polyethylene, substantially linear copolymers of ethylene and a C3-C8  $\alpha$ -olefin, polypropylene, polyvinylidene chloride, ethylene vinyl acetate, polylactic acid, mixtures of two or more of these polymers, or mixtures of one of these

polymers with another thermoplastic polymer. The film can be a co-extruded film, if desired.

Bottom edge **17** of compartment **15** and bottom edge **18** of compartment **16** can be formed using any desired method. For example, the bottom edges can be formed by folding the film, by heat sealing, by ultrasonic sealing, by an adhesive seal, or by any other desired method.

The side edges of compartments **15** and **16** are formed by joining layers of film along the side edges thereof using any desired method. For example, the side edges can be formed by hot wire sealing, hot knife sealing, ultrasonic sealing, an adhesive seal, or by any other desired method. The result is that every two layers of film are joined together such that two layers together form a compartment. Thus, in FIGS. **1** and **2**, layers **11** and **12** are joined together to form compartment **15**, while layers **13** and **14** are joined together to form compartment **16**. If desired all layers can be joined along the side edges.

The bag **10** includes means for joining compartment **15** and compartment **16** proximate to the tops of the compartments, so that the bag **10** is a single unit. Compartments **15** and **16** can be joined, proximate to the tops, in any desired manner. For example, the compartments can be joined by a continuous or intermittent heat seal or ultrasonic seal.

Alternatively, as shown in FIG. **3**, the compartments can be joined by a fold **52** in the film at the top of the bag between layers **12** and **13**. Fold **52** can be above or below the fasteners. In a preferred embodiment, fold **52** extends about 0.5 inches above the bottom of the fasteners.

Alternatively, the means for joining compartments **15** and **16** can be an adhesive **36** disposed continuously or intermittently between layers **12** and **13**. The adhesive is preferably applied to a point proximate to the closures. Suitable adhesives include any adhesive that provides sufficient adhesion to the film layers **12** and **13** so that the layers remain attached while compartments **15** and/or **16** are opened. Examples of such adhesives include HM2707 and HL2203, available commercially from H. B. Fuller. An adhesive is especially useful when closure elements are disposed along both layers **12** and **13**, in order to stabilize and align the closures.

Compartments can be joined by any other suitable means, such as, for example, by extruded lamination of a polymer such as low density polyethylene. The effect of joining the compartments proximate to the top is to minimize movement of the aligned closure elements with respect to each other. When movement of the closures is minimized, it is easier for a consumer to close the compartments simultaneously and to open one or more compartments.

As shown in FIG. **3**, in a preferred embodiment, both a fold **52** and an adhesive **36** are used as means for joining the compartments. In this embodiment, the adhesive **36** is applied from the point of fold **52** down to a point at least between the profiles **31b** and **32b**. This distance can be as high as 0.5 inches (12.7 mm), although preferably the adhesive is applied in a band having a width of from about  $\frac{1}{8}$  inch (3.17 mm) to about  $\frac{1}{16}$  inch (1.59 mm). Preferably the adhesive is applied between the profiles **31b** and **32b** or above the profiles **31b** and **32b**.

The bag **10** includes a closure disposed along the top of each compartment, so that each compartment **15** and **16** has a complete closure across the top. The term "closure element" is defined herein to mean one part of a closure. For example, on a zipper closure, a closure element is one profile or the other of the zipper, e.g., a rib profile or a groove

profile. On an adhesive closure, a closure element is one adhesive strip or the other. The closure elements can be post-applied, integral or laminated to the film, all of which are commonly known methods of applying closures to reclosable thermoplastic bags.

In one embodiment, a double-sided zipper tape can be laminated to the tops of layers **12** and **13**. A double-sided zipper tape is one in which both sides of the zipper tape have a profile of a plastic zipper on it, i.e., a rib profile or a groove profile. The profiles extend outwardly from each side of the zipper tape such that a single zipper tape contains two profiles extending therefrom.

FIG. **3** illustrates a sectional view of closures **31** and **32** which can be used for the present invention. Closures **31** and **32** can be any suitable closures. For example, as shown, closure **31** can be a plastic zipper having interlockable profiles **31a** and **31b**, and closure **32** can also be a plastic zipper having interlockable profiles **32a** and **32b**. However, the closures can be adhesive closures or any other suitable reclosable closures, if desired, as shown in FIG. **6**, wherein adhesive closure strips are shown at **33a**, **33b**, **34a**, and **34b**.

The profiles **31a**, **31b**, **32a** and/or **32b** of the plastic zipper are disposed along the tops of layers **11**, **12**, **13**, and **14**, so that each compartment has a complete closure along the top thereof. The closure on any two compartments need not be the same, although they can be. For example, one compartment might have a plastic zipper while another compartment might have an adhesive closure.

The closures on each compartment are substantially aligned with each other such that all of the compartments can be closed with a single motion on the part of a consumer. In this manner, all of the compartments can be closed simultaneously. The term "aligned" is defined herein to mean that the center points of the profiles are lined up such that, as seen from a front view, only one closure element can be seen, with all of the other closure elements being lined up substantially behind that closure element and thus substantially hidden from view. Preferably, the closure elements are aligned such that the center points are less than or equal to  $\frac{1}{2}$  inch (1.27 cm) away from each other. More preferably, the center points are  $\frac{1}{4}$  inch (0.63 cm) away from each other, and most preferably, the center points are  $\frac{1}{8}$  inch (0.32 cm) away from each other. FIGS. **2** and **9** depict two examples of closures which are aligned according to the teachings of the invention.

As shown in FIGS. **1-3**, the closures are positioned such that the rib profiles **31b** and **32b** are aligned with each other. In the embodiment shown, the rib profiles are positioned back-to-back. The term "back-to-back" is defined herein to mean that the closure elements are positioned substantially adjacent to each other but extend away from each other. In the embodiment shown, closure element **31b** is positioned adjacent closure element **32b**, and closure elements **31b** and **32b** are positioned such that the closure face away from each other. Thus, closure elements **31b** and **32b** are said to be aligned back-to-back.

Back-to-back alignment eases the ability for a consumer to interlock both closures **31** and **32** on both compartments **15** and **16** in a single motion. On the other hand, closures **31** and **32** can be opened independently from one another, such that one compartment can be opened while the other compartment remains closed.

In one embodiment, the bag can be designed such that one closure will open preferentially. In other words, when the bag has two adjacent compartments with plastic zippers disposed across the tops thereof, the force required to open

one of the plastic zippers can be modified to be greater than the force required to open the other plastic zipper. The opening force can be modified using any desired means. For example, the opening force of a plastic zipper can be modified by altering the profile geometry. Examples include making the groove of one groove profile bigger or making the rib of one rib profile thinner, or altering one or more of the radii of the various hooks in the closure. Alternatively, the opening force of a plastic zipper can be modified by changing the type of plastic to one that has different friction characteristics.

The compartments can be of equal size, although they need not be. Preferably, the compartments all have equal width, although the depths of the compartments can vary. For example, all of the compartments might have a 6.5 inch (16.51 cm) width and an 8 inch (20.32 cm) depth. Alternatively, all of the compartments might have a 6.5 inch (16.51 cm) width, while one compartment has an 8 inch (20.32 cm) depth and another compartment has a 6 inch (15.24 cm) depth.

The thicknesses of the layers of film can be equal or the thicknesses can vary, as shown in FIG. 8. For example, if desired, all of layers 11, 12, 13 and 14 can have a thickness in the range of from 2.5 mils (0.0635 mm) to 5.0 mils (0.127 mm), which is a typical thickness of a ZIPLOC brand freezer bag. Alternatively, the layers can all have thicknesses in the range from 1.75 mils (0.0445 mm) to 2.7 mils (0.0686 mm), which is a typical thickness of a ZIPLOC brand storage bag, or the layers 11, 12, 13 and 14 can all have thicknesses in the range of from 1.0 mils (0.0254 mm) to 1.2 mils (0.0305 mm), which is a typical thickness of a ZIPLOC brand sandwich or snack bag. On the other hand, the layers 11, 12, 13 and 14 can all have different thicknesses, which can be any combination of the above thicknesses. Moreover, one or more of layers 11, 12, 13 and/or 14 can be even thinner, from 0.6 mils (0.0152 mm) to 1.2 mils (0.0305 mm). The desired thickness of the various layers depends upon the final use of the multicompartiment bag. For example, thicker layers of film are general useful for longer term storage, whereas thinner film thicknesses are useful for items which will be used in the short term. Thinner layers also tend to cling to the packaged material better than thicker layers. If desired, one or more of the layers can be microperforated. The term "microperforated" means that the film has small holes therein. Such a microperforated film makes the compartment suitable for storing produce therein, as the microperforated film allows the produce to breathe. Preferably, the microperforations, or holes, have a size in the range of from 200 microns to about 900 microns. If desired, different layers can have different patterns of microperforations therein. For example, layer 12 might have microperforations in the range of from 200 to 300 microns, while layer 13 can have microperforations of from 800 to 900 microns. Preferably, the density of the microperforations is from 100 microperforations to 500 microperforations per layer of film, for a 6.625 inch (16.83 cm) by 7 inch (17.78 cm) layer of film. The microperforations can be evenly dispersed across a layer or can be clustered in groups of several microperforations. Furthermore, different layers of film can have different patterns of microperforations. Generally, any combinations of patterns of microperforations can be used. The microperforations can be formed using any conventional method such as a hot needle perforator. More details about microperforated bags are described in U.S. Pat. No. 5,492,705, incorporated herein by reference.

If desired, one or more of the layers can be embossed. Embossing creates a texture on the surface of the film.

Embossing thus provides a visual cue to the consumer that one layer of film is different than the other layers, as the texture scatters the light differently, thereby changing the appearance of the film. Moreover, the textured surface adheres to the stored food better than a smooth surface does. Any combination of layers can be embossed.

The preferred method of making the bag of the present invention begins with an extrusion process well known in the art. The bag is made with a large extruded sheet of thermoplastic film. FIG. 4 illustrates an example of such an extruded sheet 40 that can be used to make the bag of the present invention. The sheet 40 comprises at least four panels 41, 42, 43 and 44, each panel representing a layer of film in the final bag. Thus, the panels 41, 42, 43 and 44 correspond to the layers 11, 12, 13 and 14 in the bag shown in FIGS. 1-2. The panels 41, 42, 43 and 44 can be the same size, or the size of the panels can vary according to the desired size of the final compartments.

As shown, extruded sheet 40 contains profiles 31a, 31b, 32a and 32b integral therewith. However, if desired, profiles 31a, 31b, 32a and 32b can be post-applied, i.e., applied after the film is extruded, or profiles 31a, 31b, 32a and 32b can be attached to the sheet by laminating a zipper tape thereto. In one embodiment, a double-sided zipper tape having profile 31b on one side thereof and profile 32b on the other side, can be laminated to the sheet. As shown in FIG. 7, a zipper tape 35 may be centered over fold line 52, so that profiles 31b and 32b are positioned in such a manner that they will be back-to-back when the sheet is folded on fold line 52. When the profiles are extruded integrally with sheet 40, preferably, profiles 31b and 32b are side by side on the sheet 40, so that when the sheet 40 is folded, as described below, the profiles 31b and 32b are back to back.

If desired, any or all of the panels 41, 42, 43 or 44 can be microperforated or embossed as shown in FIG. 7. In this manner, the final bag will have some or all layers which will be microperforated or embossed. Furthermore, if the final bag is to have layers of varying thicknesses, the extruder die lip can be designed such that the die gap varies, thereby forming an extruded sheet 40 that has multiple thicknesses. When the sheet 40 is folded, as described below, the layers will then have varying thicknesses.

FIG. 5 illustrates the manner in which the sheet 40 can be folded to make the bag of the present invention. The sheet 40 can be folded along lines 51, 52 and 53. The folds will form the bottom edges 17 and 18 along the fold lines 51 and 53, respectively.

The fold along line 52 will position the profiles 31b and 32b back to back. Fold line 52 is also the point at which the compartments 15 and 16 are joined. The fold along lines 51 and 53 enable the profiles 31a and 32a to be aligned with profiles 31b and 32b to close the compartments. Preferably, the extruded sheet is thinner proximate to the fold line 52, referred to herein as the "thinner section". The thinner section permits easier folding. More preferably, the thinner section is less than or equal to half as thick as the rest of the extruded sheet. Even more preferably, the thinner section is from 0.5 mils (0.0127 mm) to 2.0 mils (0.0508 mm) thick and yet even more preferably from 1.0 mils (0.0254 mm) to 1.5 mils thick (0.0381 mm). If the thinner section is too thin, the sheet will tear easily, whereas if the thinner section is too thick, the sheet will not fold easily. Preferably, the thinner section is 1/4 inch (6.35 mm) wide or less.

If desired, as the extruded sheet 40 is being folded, an adhesive can be disposed along the back of the sheet on either side of the fold line 52. In this manner, when the sheet



40 is folded, the compartments will be joined by the fold as well as by the adhesive disposed along the sheet. The adhesive allows better alignment of the zipper profiles, because profiles 31*b* and 32*b* will be held in place and free from movement with respect to one another. Normally, the compartments are also joined by the side seals.

After the sheet is folded and the adhesive is applied, the sheet is heat sealed along the edges of the bag. The heat sealing permeates all of the panels, or layers of the bag. The heat seal can be accomplished by use of a hot wire, a hot knife, or any other desired means. In this manner, the side edges of the compartments are formed.

If desired, the sheet can be corona-treated before being folded. Corona treating permits printing to be easily applied to the bag surface. For example, a stripe can be printed along the bottom of one or more of the compartments in order to give a visual cue to the consumer as to the location of the bottom of the compartment.

The following examples are not meant to limit the scope of the invention.

#### EXAMPLE 1

A multicompartment bag having two compartments is made. The first compartment has the dimensions 6.625 inches long (16.83 cm) by 7 inches wide (17.78 cm). The second compartment has the dimensions 4.75 inches long (12.06 cm) by 7 inches wide (17.78 cm).

Both of the sidewalls of the first compartment are 1.1 mils (0.028 mm) thick on average. Both of the sidewalls of the second compartment are 1.1 mils (0.028 mm) thick on average. A groove profile of a plastic zipper is disposed along the outer layer of the first compartment, formed by a cast integral extrusion process. Likewise, a groove profile of a plastic zipper is disposed along the outer layer of the second compartment, formed by a cast integral extrusion process. The rib profiles are aligned back-to-back along either side of a double-sided zipper tape, which is laminated to the top of the inner layer of the first compartment.

The two compartments are joined by a fold in the film between the two inner layers and by side seals along the side edges of the bag. The fold is about 0.5 inches (1.27 cm) below the plastic zipper when the zipper is closed. The laminated double-sided zipper tape extends upwardly from the fold such that the rib profiles on either side of the zipper tape can come into contact with and interlock with the groove profiles, thereby closing the compartments.

#### EXAMPLE 2

A multicompartment bag having two compartments is made. The first compartment has the dimensions 6.625 inches long (16.83 cm) by 7 inches wide (17.78 cm). The second compartment has the dimensions 4.75 inches long (12.06 cm) by 7 inches wide (17.78 cm).

Both of the sidewalls of the first compartment are 1.1 mils thick (0.028 mm) on average. Both of the sidewalls of the second compartment are 1.1 mils thick (0.028 mm) on average. A plastic zipper is disposed along the tops of both the first and second compartments.

The two compartments are joined by a fold in the film between the two inner layers and by an adhesive disposed between the two inner layers. In addition, the compartments are joined by side seals along the side edges of the bag.

#### EXAMPLE 3

A multicompartment bag having three compartments is made. The first compartment has the dimensions 8.5 inches

long (21.59 cm) by 7 inches wide (17.78 cm). The second compartment is 6.625 inches long (16.83 cm) by 7 inches wide (17.78 cm). The third compartment is 4.75 inches long (12.06 cm) by 7 inches wide (17.78 cm).

The thicknesses of both of the sidewalls of the first compartment are 2.2 mils on average (0.056 mm). The thicknesses of both of the sidewalls of the second compartment are 1.1 mils on average (0.028 mm). The thicknesses of both of the sidewalls of the third compartment are 1.1 mils on average (0.028 mm).

A plastic zipper is disposed along the tops of both the first and second compartments. An adhesive closure is disposed along the top of the third compartment.

The compartments are joined by a fold in the film between adjacent layers and by an adhesive disposed between the adjacent layers. In addition, the compartments are joined by side seals along the side edges of the bag.

#### EXAMPLE 4

A multicompartment bag having two compartments is made. The first compartment has the dimensions 6.625 inches long (16.83 cm) by 7 inches wide (17.78 cm). The second compartment has the dimensions 4.75 inches long (12.06 cm) by 7 inches wide (17.78 cm).

The thicknesses of both of the sidewalls of the first compartment are 1.1 mils on average (0.028 mm). The thicknesses of both of the sidewalls of the second compartment are 1.1 mils on average (0.028 mm). A plastic zipper is disposed along the tops of both the first and second compartments.

The two compartments are joined by a fold in the film between the two inner layers and by an adhesive disposed between the two inner layers. In addition, the compartments are joined by side seals along the side edges of the bag.

The outer layer of the first compartment, which corresponds to layer 11 of FIG. 1, is microperforated. The microperforations have a diameter of 250 microns on average. There are 500 microperforations on the layer.

The outer layer of the second compartment, which corresponds to layer 14 of FIG. 1, is microperforated. The microperforations have a diameter of 850 microns on average. There are 100 microperforations on the layer.

#### EXAMPLE 5

A multicompartment bag having two compartments is made. The first compartment has the dimensions 6.625 inches long (16.83 cm) by 7 inches wide (17.78 cm). The second compartment also has the dimensions 6.625 inches long (16.83 cm) by 7 inches wide (17.78 cm).

The thickness of the outer sidewall of the first compartment is 3.5 mils on average (0.089 mm). The thickness of the inner sidewall of the first compartment is 0.8 mils on average (0.020 mm). Likewise, the thickness of the outer sidewall of the second compartment is 3.5 mils on average (0.089 mm), and the thickness of the inner sidewall of the second compartment is 0.8 mils on average (0.020 mm). A plastic zipper is disposed along the tops of both the first and second compartments.

The two compartments are joined by a fold in the film between the two inner layers and by an adhesive disposed between the two inner layers. In addition, the compartments are joined by side seals along the side edges of the bag.

The inner layers of both the first and second compartments are embossed. The pattern on the embossed layers appears to be a repeating diamond-shaped pattern.

While certain representative embodiments and details have been shown for purposes of illustrating the invention, it will be apparent to those skilled in the art that various changes in the methods and apparatus disclosed herein may be made without departing from the scope of the invention, which is defined in the appended claims.

What is claimed is:

**1.** A multicompartment reclosable thermoplastic bag comprising:

at least two compartments, each compartment having a top, a bottom edge, two opposing side edges, and inner and outer sidewalls joined at the side edges and the bottom edge, each side wall having a top edge and a closure across each top edge, the closures being arranged back-to-back, the closures being aligned such that the center points of the closures are less than  $\frac{1}{2}$  inch (1.27 cm) away from each other,

wherein the compartments are attached together at the top edges of the inner sidewalls of each compartment with a fold, the fold not extending beyond the top edges of the sidewalls, the compartments being further attached with adhesive disposed proximate the top edges of the inner sidewalls of each compartment the bottom edges of the compartments being unattached.

**2.** The bag of claim **1**, wherein the compartments are attached together proximate to the tops by a folded section of plastic film, an adhesive, a heat seal, an ultrasonic seal, an extruded lamination, or a combination thereof.

**3.** The bag of claim **1**, wherein the closure on at least one of the compartments is a plastic zipper.

**4.** The bag of claim **1**, wherein the closure on at least one of the compartments is an adhesive closure.

**5.** The bag of claim **1**, wherein the closures on at least two adjacent compartments are plastic zippers.

**6.** The bag of claim **1**, wherein the size of the compartments varies.

**7.** The bag of claim **1**, wherein the thicknesses of the sidewalls varies.

**8.** The bag of claim **1**, wherein at least one sidewall of a compartment contains microperforations.

**9.** A multicompartment reclosable thermoplastic bag comprising:

at least two compartments, each compartment having a top, a bottom edge, two opposing side edges, and two opposing sidewalls joined at the side edges and the bottom edge, each compartment having a closure across the top thereof the closures being arranged back-to-back, the closures being aligned such that the center points of each closure are less than  $\frac{1}{2}$  inch (1.27 cm) away from each other,

wherein the compartments are attached together proximate the tops of the compartments, and the bottom edges of the compartments are free from being attached to each other, wherein the closures on at least two adjacent compartments are plastic zippers, and wherein

the opening force for one plastic zipper is greater than the opening force for the other plastic zipper.

**10.** A multicompartment reclosable thermoplastic bag comprising:

at least two compartments, each compartment having a top, a bottom edge, two opposing side edges, and two opposing sidewalls joined at the side edges and the bottom edge, each compartment having a closure across the top thereof, the closures being arranged back-to-back, the closures being aligned such that the center points of each closure are less than  $\frac{1}{2}$  inch (1.27 cm) away from each other,

wherein the compartments are attached together proximate the tops of the compartments, the bottom edges of the compartments are free from being attached to each other, the closures on at least two adjacent compartments are plastic zippers, and two profiles of the plastic zippers are aligned back-to-back on a double-sided zipper tape.

**11.** A reclosable thermoplastic bag, comprising:

a first compartment;

a second compartment;

a first closure operatively associated with the first compartment;

a second closure operatively associated with the second compartment, the first and second closures being independently operable to open and close the first and second compartments independently, the first and second closures being simultaneously, the first and second closures including a double-sided zipper tape.

**12.** The reclosable thermoplastic bag of claim **11**, wherein the first closure includes a mating rib and groove provided near an opening of the first compartment, the second closure includes a mating rib and groove provided near an opening of the second compartment, and the mechanism includes the mating ribs and grooves and sidewalls forming the first and second compartments.

**13.** The reclosable thermoplastic bag of claim **11**, wherein the first and second closures are operable to substantially seal the first and second compartments, respectively.

**14.** A method of using a reclosable thermoplastic bag having first and second compartments, comprising the steps of:

simultaneously closing the first and second compartments; and

opening one of the first and second compartments while leaving the other of the first and second compartments closed; and

opening the other of the first and second compartments, the first opening step requiring greater force than the second opening step.

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 6,234,675 B1  
DATED : May 22, 2001  
INVENTOR(S) : Saad et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 10,  
Line 31, after "simultaneously" please insert -- closable --.

Signed and Sealed this  
Fourth Day of June, 2002

*Attest:*

A handwritten signature in black ink, appearing to read "James E. Rogan", with a horizontal line drawn underneath it.

*Attesting Officer*

JAMES E. ROGAN  
*Director of the United States Patent and Trademark Office*